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174, Sri Ranga Complex
Amrutha Nagar Main Road
New Bank Colony, Konanakunte
Bangalore - 560 062.
Mobile : +91 97429 59595
Tele/Fax : 080-2632 2565
E-mail : civilexpertsltd@gmail.com
URL : www.civilexperts.in

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC/BBMP/TP/049/2015-16 10.06.2015

Aggregate Gradation Test
IS : 2386 Part I

Client	**Executive Engineer,** Project Division, Yelahanka Zone, Bangalore.
Agency	**M/s. SKS Infrastructure Pvt Ltd**, No.180, K.G.Nagar, Main Road, Bangalore - 19.
Name of the work	Construction and Widening of Alternate Route to Abbigere Main Road from Major Sandeep Unnikrishnan Road in Ward No.11, BBMP, Bangalore.
Reference	EE(Project)/Ynk Zone/WO/08/13-14 Dated:05.11.2013
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	10.06.2015

5250 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	369	7.03	7.03	92.97	90-100	
13.2	1750	33.33	40.36	59.64	56-88	
4.75	1865	35.52	75.89	24.11	16-36	
2.36	825	15.71	91.60	8.40	4-19	
0.3	132	2.51	94.11	5.89	2-10	
0.075	85	1.62	95.73	4.27	0-8	

Total Weight of Sample: **5050** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	382	7.56	7.56	92.44	90-100	
13.2	1454	28.79	36.36	63.64	56-88	
4.75	1820	36.04	72.40	27.60	16-36	
2.36	655	12.97	85.37	14.63	4-19	
0.3	420	8.32	93.68	6.32	2-10	
0.075	98	1.94	95.62	4.38	0-8	

Note:

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Asst. Executive Engineer

Authorised Signatory

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Job No.: CECTC/BBMP/TP/049/2015-16 Date: 10.06.2015

Aggregate Impact Value
IS: 2386 Part IV

Client	**Executive Engineer,** Project Division, Yelahanka Zone, Bangalore.
Agency	**M/s. SKS Infrastructure Pvt Ltd**, No.180, K.G.Nagar, Main Road, Bangalore - 19.
Name of the Work	Construction and Widening of Alternate Route to Abbigere Main Road from Major Sandeep Unnikrishnan Road in Ward No.11, BBMP, Bangalore.
Reference	EE(Project)/Ynk Zone/WO/08/13-14 Dated:05.11.2013
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	10.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	377	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	293	293	293	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.87	22.28	22.69	22.28

Comments:
→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CECTC/BBMP/TP/049/2015-16 : 10.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client : **Executive Engineer,** Project Division, Yelahanka Zone, Bangalore.

Agency : **M/s. SKS Infrastructure Pvt Ltd**, No.180, K.G.Nagar, Main Road, Bangalore - 19.

Name of Work : Construction and Widening of Alternate Route to Abbigere Main Road from Major Sandeep Unnikrishnan Road in Ward No.11, BBMP, Bangalore.

Reference : EE(Project)/Ynk Zone/WO/08/13-14 Dated:05.11.2013

Technical Reference : IS 2386(Part 1) 1963 (RA 2007)

Type of Mix : Bituminous Concrete

Date of Testing : 10.06.2015

Passing through IS Sieve, mm	Retained On IS Sieve, mm	Weight of Sieved Fraction (W) gms		Proportion of Size range in the sample, X = 100xW/ΣW		Weight of 200 pieces of aggregates of the range, (P) in gms		Thickness gauge size, mm	Weight of flaky particles (F)in gms		Percentage by Weight of flaky aggregates in gms Y= 100xF/P	Weighed Percentage of flaky aggregates in gms XY=X × Y	Weight of fraction consisting of at least 200 Pieces in gms		Length gauge size in mm	Weight of aggregates in each fraction retained on Length gauge in gms	
63.00	50.00	W1		X1		P1		33.90	F1				P1		-	E1	
50.00	40.00	W2		X2		P2		27.00	F2				P2		81.00	E2	
40.00	31.50	W3		X3		P3		21.50	F3				P3		64.40	E3	
31.50	25.00	W4		X4		P4		16.95	F4				P4	-	-	E4	-
25.00	20.00	W5		X5		P5		13.50	F5				P5			E5	
20.00	16.00	W6	1795	X6	38.66	P6	1356	10.80	F6	220	16.22	627.23	P6	1356.0	32.40	E6	159
16.00	12.50	W7	1432	X7	30.84	P7	1140	8.55	F7	124	10.88	335.48	P7	1140.0	25.60	E7	101
12.50	10.00	W8	956	X8	20.59	P8	711	6.75	F8	94	13.22	272.22	P8	711.0	20.20	E8	72
10.00	6.30	W9	460	X9	9.91	P9	209	4.89	F9	51	24.40	241.76	P9	209.0	14.70	E9	46
		ΣW	**4643.0**									**ΣXY**	**1476.69**	**ΣP**	**3416.0**	**ΣE**	**378.0**

Result : Flakiness Index = **14.77%**

Elongation Index = **11.07%**

Result : Combined Flakiness & Elongation index **25.83%**

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Comments: Maximum Allowable Combined flakiness and Elongation indices 35%

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Job No.: CECTC/BBMP/TP/049/2015-16

10.06.2015

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Project Division, Yelahanka Zone, Bangalore.
Agency	**M/s. SKS Infrastructure Pvt Ltd**, No.180, K.G.Nagar, Main Road, Bangalore - 19.
Name of theWork	Construction and Widening of Alternate Route to Abbigere Main Road from Major Sandeep Unnikrishnan Road in Ward No.11, BBMP, Bangalore.
Reference	EE(Project)/Ynk Zone/WO/08/13-14 Dated:05.11.2013
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	10.06.2015

Total Weight of Sample: **5270** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Semi Dense Bituminous concrete Grade-II specification as per MORTH
13.2	484	9.18	9.18	90.82	79 - 100	
9.5	515	9.77	18.96	81.04	70 - 88	
4.75	652	12.37	31.33	68.67	53 - 71	
2.36	604	11.46	42.79	57.21	42 - 58	
1.18	536	10.17	52.96	47.04	34 - 48	
0.600	620	11.76	64.72	35.28	26 - 38	
0.300	775	14.71	79.43	20.57	18 - 28	
0.150	389	7.38	86.81	13.19	12 - 20	
0.075	401	7.61	94.42	5.58	4 - 10	

Total Weight of Sample: **5250** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Semi Dense Bituminous concrete Grade-II specification as per MORTH
13.2	686	13.07	13.07	86.93	79 - 100	
9.5	460	8.76	21.83	78.17	70 - 88	
4.75	615	11.71	33.54	66.46	53 - 71	
2.36	521	9.92	43.47	56.53	42 - 58	
1.18	604	11.50	54.97	45.03	34 - 48	
0.600	594	11.31	66.29	33.71	26 - 38	
0.300	489	9.31	75.60	24.40	18 - 28	
0.150	502	9.56	85.16	14.84	12 - 20	
0.075	464	8.84	94.00	6.00	4 - 10	

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Job No.: CECTC/BBMP/TP/049/2015-16

Date:10.06.2015

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Project Division, Yelahanka Zone, Bangalore.
Agency	:	**M/s. SKS Infrastructure Pvt Ltd,** No.180, K.G.Nagar, Main Road, Bangalore - 19.
Name of the Work	:	Construction and Widening of Alternate Route to Abbigere Main Road from Major Sandeep Unnikrishnan Road in Ward No.11, BBMP, Bangalore.
Reference	:	EE(Project)/Ynk Zone/WO/08/13-14 Dated:05.11.2013
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	10.06.2015

The results of the tests conducted on the Semi Dense bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.23	9.89	9 Kn (min)
2	Marshal flow, mm	2.89	3.56	2 – 4
3	Percent air voids in Mineral Aggregate	13.85	14.26	13 – 15
4	Voids in Compacted Mix	4.85	5.32	3 – 6
5	Percent Voids filled with Bitumen	69.32	70.54	65 - 75
6	Density, g/cc	2.26	2.27	--

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